

EXHIBIT J

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

COREPHOTONICS, LTD.,
Patent Owner.

Case No. IPR2020-00905
U.S. Patent No. 10,225,479

PATENT OWNER'S PRELIMINARY RESPONSE

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I. INTRODUCTION

This Petition should be denied because Petitioner has failed to make out a *prima facie* case for invalidity. Both of the challenged independent claims require the use of two images to create a “fused” image. However, the sole reference Petitioner relies on for this limitation, Parulski, teaches only using one image to “enhance” or improve the “focus” of the second image. It contains no discussion of fusing images as taught by the ’479 Patent. For this reason, all of the Petition’s challenges necessarily fail.

Moreover, the Petition fails to show that its proposed combination renders obvious claim 1. Petitioner’s argument as to the claim limitations styled [1.4] and [1.5] are contradicted by Parulski. Petitioner argues that this limitation, which requires “a first autofocus (AF) mechanism” on the Wide lens, is disclosed by Parulski because a POSITA “would have known” to use a first AF mechanism with the Wide lens. But Petitioner ignores that the lack of a first AF mechanism is actually a feature of Parulski. It was an intentional design choice, made to minimize the cost and size of Parulski’s device. Petitioner ignores this disclosure, let alone explains why a POSITA would have implemented a first AF mechanism despite Parulski teaching away from the use of such a mechanism. Petitioner’s further reliance on Konno fails as it

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teaches only the use of one AF mechanism and not two as required by the claims.

For at least these reasons, Petitioner has failed to establish a likelihood of prevailing and the Petition should not be instituted.

Moreover, the Board should exercise its discretion to deny institution, even if it does find a likelihood of prevailing. This is one of two IPRs filed simultaneously by Petitioner to challenge the claims of the '479 patent. Petitioner has failed to establish that this is one of the “rare” cases where multiple simultaneous petitions against the same patent are justified.

II. OVERVIEW OF THE '479 PATENT

The '479 patent is generally directed to “thin digital cameras with both still image and video capabilities.” Ex. 1001 at 1:24-26. It was issued on March 5, 2019, and claims priority to a provisional patent application filed on June 13, 2013. As the patent described, the prior art included “[a]ttempts to use multi-aperture imaging systems to approximate the effect of a zoom lens.” *Id.* at 1:59-60. One problem with such prior art systems was that they led to parallax effects when taking video. *Id.* at 2:39-55. Other solutions led to degraded image quality. *Id.* at 2:56-67. The patent owner, Corephotonics, developed an innovative dual-aperture camera technology “with fixed focal length

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lenses, the camera configured to operate in both still mode and video mode to provide still and video images, wherein the camera configuration uses partial or full fusion to provide a fused image in still mode and does not use any fusion to provide a continuous, smooth zoom in video mode.” *Id.* at 3:20-25.

The Petitioner, Apple, adopted this technology in its iPhone models with dual rear cameras, starting with the iPhone 7 Plus in September 2016 and continuing with its successive generations of new iPhone models. The technology is also now used in smartphones made by other manufacturers, such as Samsung and Huawei.

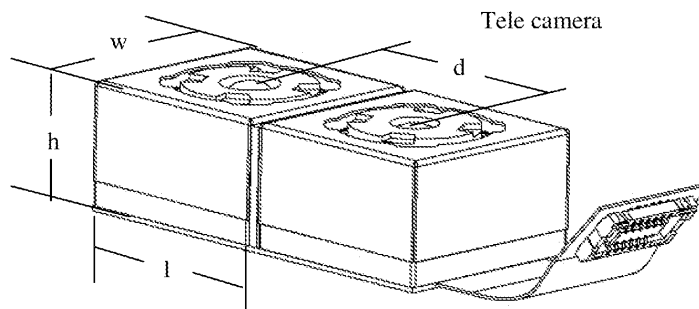


FIG. 1B

Ex. 1001 at Fig. 1B.

To make this technology a reality, Corephotonics developed solutions to practical issues, some of which are the subject matter of the '479 patent.

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For example, Corephotonics developed technology that results in a “fused image including always information from both W [“Wide”] and T [“Tele”] images.” *Id.* at 3:48-51. One embodiment of this technology allows out-of-focus background to be fused with another image of an in focus subject, creating for example a blurrier background and creating the effect of a even shallower DOF. The inventive process is summarized in the ’479 patent as follows:

Due to the large focal length, objects that are in front or behind the plane of focus appear very blurry, and a nice foreground-to-background contrast is achieved. However, it is difficult to create such a blur using a compact camera with a relatively short focal length and small aperture size, such as a cell-phone camera. In some embodiments, a dual-aperture zoom system disclosed herein can be used to capture a shallow DOF photo (shallow compared with a DOF of a Wide camera alone), by taking advantage of the longer focal length of the Tele lens. The reduced DOF effect provided by the longer Tele focal length can be further enhanced in the final image by fusing data from an image captured simultaneously with the Wide lens. Depending on the distance to the object, with the Tele lens focused on a subject of the photo, the Wide lens can be focused to a closer distance than the subject so that objects behind the subject appear very blurry. Once the two images are captured, information from the out-of-focus blurred background in the Wide image is fused with the original Tele image background information, providing a blurrier background and even shallower DOF.

Ex. 1001 at 4:18-38.

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III. LEGAL STANDARDS

The petitioner has the burden to “demonstrate that there is a reasonable likelihood that at least one of the claims challenged in the petition is unpatentable.” 37 C.F.R. § 42.108. A petition challenging a claim on grounds of obviousness must sufficiently explain (1) “how specific references could be combined,” (2) “which combination(s) of elements in specific references would yield a predictable result,” and (3) “how any specific combination would operate or read on” the claims. *ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312, 1327–28 (Fed. Cir. 2012).

Moreover, a petitioner may not rely on the Board to substitute its own reasoning to remedy the deficiencies in a petition. *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (rejecting the Board’s reliance on obviousness arguments that “could have been included” in the petition but were not, and holding that the Board may not “raise, address, and decide unpatentability theories never presented by the petitioner and not supported by the record evidence”); *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1367 (Fed. Cir. 2015) (holding that “a challenge can fail even if different evidence and arguments might have led to success”). Nor may the petitioner remedy the deficiencies in a reply brief. *Wasica Finance GMBH v. Continental*

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Auto. Systems, 853 F.3d 1272, 1286 (Fed. Cir. 2017) (“Rather than explaining how its original petition was correct, Continental’s subsequent arguments amount to an entirely new theory of prima facie obviousness absent from the petition. Shifting arguments in this fashion is foreclosed by statute, our precedent, and Board guidelines.”) (internal citations omitted).

IV. THE PETITION FAILS TO ESTABLISH THE REASONABLE LIKELIHOOD OF A *PRIMA FACIE* CASE OF OBVIOUSNESS

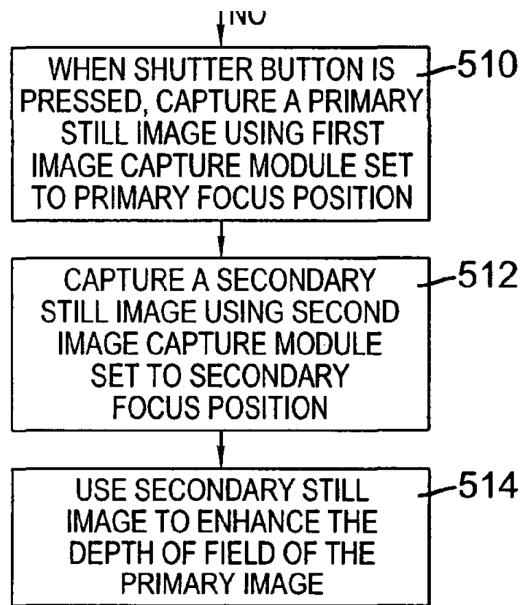
A. The Petition Fails To Demonstrate That Parulski Teaches Creation Of A “Fused Image” As Required By Both Of The Independent Claims

Both of the challenged independent claims require processing the “Wide and Tele images to create a fused image.” [1.5.1], [23.3]. Petitioner relies solely on teachings from Parulski for these limitations. Paper 3 at 26-29, 39. However, Parulski does not teach, or render obvious, the creation of a “fused image.”

In the portion of Parulski cited by Petitioner (Ex. 1005 at 28:45-57), teaches “combining” images by using the secondary image to “enhance the depth of field of the primary image:

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Ex. 1005 at 16, Fig. 14; *Id.* at 28:45-57 (“In a first type of augmentation or modification, *and as was depicted in connection with FIG. 14*, an image is captured from the primary capture unit at one focus position and another image is captured from the scene analysis capture unit Then, the two images are combined into modified image with a broadened depth of field.” (emphasis added)). Petitioner’s secondary cite to 22:14-42 of Parulski refers to using the image processor to “focus,” not “fuse,” the image. *Id.* at 22:14-42 (“the second image capture stage 2 is used to capture autofocus images for autofocus of the first image capture stage 1, which are processed by image processor 50 and *used to focus the first image capture stage 1.*” (emphasis added)).

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The use of one image to “enhance” or “focus” another does not teach “fusing” two images as claimed by the ’479 patent. *See* Ex.1001 at 2:25-26 (“The images are then stitched (fused) together to form a composite (“fused”) image.”); *id.* at 3:47-52 (“In still mode, zoom is achieved ‘with fusion’ (full or partial), by fusing W and T images, with the resulting ***fused image including always information from both W and T images.***” (emphasis added)); *id.* at 3:64-4:3 (“The fused image is processed according to a user zoom factor request. As part of the fusion procedure, up-sampling may be applied on one or both of the grabbed images to scale it to the image grabbed by the Tele sub-camera or to a scale defined by the user.”). Parulski does not teach that any pixels from the second image are included, or fused, in the first image.

The Petition’s reliance on the “dog and mountain” example from Parulski is misplaced. Paper 3 at 27-28. This example concerns Parulski’s teaching of a “range map” which involves post-processing techniques to improve the image after it has already been captured. Ex. 1005 at 19:49-20:15 (“A map is then produced in block 484 showing the distances to different portions of the image.”). Moreover, nothing in this example teaches “fusing” two images.

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Accordingly, the Petition fails to show that Parulski teaches or renders obvious the creation of a “fused image.” As this is a requirement of both challenged independent claims, all of the Petition’s challenges necessarily fail.

B. Petitioner Has Failed To Show The “Coupled Mechanically” Limitation Of [1.3] and [1.4]

[1.3] requires “a first autofocus (AF) mechanism coupled mechanically to, and used to perform an AF action on the Wide lens” and [1.4] requires “a second AF mechanism coupled mechanically to, and used to perform an AF action on the Telephoto lens.” Paper 3 at 23-25. Petitioner has failed, however, to show that wide angle lens 612 in Parulski, which is purported to be the claimed Wide lens, has a “first autofocus (AF) mechanism coupled mechanically to it.” In the portion of Parulski cited by Petitioner, Parulski discloses autofocus subsystem 628, which is connected to telephoto lens 616, not wide angle lens 612. Ex. 1005 at 23:62-24:7; Paper 3 at 45-46.

Petitioner recognizes this issue, and argues that a POSITA “would have understood” to use a similar “autofocus mechanism” with the purported Wide lens. Paper 3 at 24. But Petitioner cites no evidence for its argument. Instead, it cites to the Durand Declaration (Ex. 1003) that simply parrots Petitioner’s attorney argument. *Neither Petitioner nor the Durand Declaration explain why*, without the benefit of hindsight, a POSITA would have understood this.

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Further, Petitioner also *fails to explain why a POSITA would have known to use a separate autofocus (AF) mechanism coupled mechanically to the Wide lens* instead of, for example, utilizing autofocus subsystem 628. Petitioner's argument is also contradicted by Parulski itself. Parulski deliberately discloses a single focusing subsystem: to reduce "cost and size." Ex. 1005 at 24:17-19; *see also id.* at Fig. 16B (showing only one focusing subsystem). Parulski discloses that size (which is reduced by not having a second focusing subsystem) is an "important constraint." *Id.* at 24:20-27. Simply put, Parulski teaches away from using a second focusing subsystem. Petitioner does not explain why, despite these disclosures of Parulski, a POSITA "would have understood" the use of an autofocus system on wide angle lens 612.

Petitioner's further reliance on Konno in combination with Parulski, does not save its challenge. Konno only teaches the use of a single AF mechanism as opposed to the two mechanisms required by claim 1. Ex. 1015 at ¶15 ("a lens moving mechanism for focusing"). Petitioner again fails to explain why "a POSITA would have understood that each lens system's focusing movement is mechanically coupled to its respective lens system" other than through citations to the Durand declaration which only parrots the attorney argument. Paper 3 at 24-25.

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Accordingly, the Petition's obviousness challenge to claim 1 fails.

V. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY INSTITUTION OF MULTIPLE IPR PETITIONS ON THE '479 PATENT

The Board is never required to institute an IPR. Even if the Board determines the reasonable likelihood standard is met by a petition, the decision to institute is discretionary. 35 U.S.C. § 314(a); *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1361 (2018) (“Even if there is one potentially meritorious challenge, we have said that the statute contains ‘no mandate to institute review,’ so the Director still has discretion to deny a petition.”).

The Board has recognized that multiple petitions filed against the same patent at the same time “may place a substantial and unnecessary burden on the Board and the patent owner and could raise fairness, timing, and efficiency concerns.” Consolidated Trial Practice Guide November 2019 at 59. The Board has indicated that such multiple petitions “are not necessary in the vast majority of cases” and “should be rare.” *Id.*

Petitioner fails to show this case is “rare” such that multiple petitions are justified. The IPR2020-00906 Petition adds only an additional four challenged claims to the claims challenged in IPR2020-00905. Furthermore, the challenges to all of the claims in both petitions are based on obviousness with

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the same primary reference, Parulski. This is not a case involving “a large number of claims [asserted] in litigation” or “a dispute about priority date,” which are the circumstances identified in the Trial Practice Guide as potentially justifying multiple petitions. Consolidated Trial Practice Guide November 2019 at 59. A petition raising this number of grounds against a small number of claims could readily have been drafted within the 14,000-word limit for a single petition. But petitioner has instead burdened the Board and patent owner with petitions totaling 27,619 words (just shy of the 28,000-word limit for two petitions), and the need to prepare double the number of filings and double the number of decisions that would ordinarily be required to resolve the challenges to a single patent.

Petitioner acknowledges that “all of the claims are directed to a dual-lens camera with wide and telephoto lenses (1) having overlapping fields of view (FOV) and (2) an autofocus mechanism providing each lens with separate focusing control.” Paper 2. However, it attempts to justify its decision to file two-separate, near 14,0000-word IPRs because the claims purportedly “perform different image processing steps.” *Id.* at 1. This assertion rings hollow. It is always the case that there are differences in claims. The ’479 patent

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is no different than any other patent in this respect. Indeed, even under Petitioner's summary, the primary difference between the claims is a "different image processing steps" involves "calculating a depth map." The first element of all of the claims is "controlling the autofocus mechanism." Id. at 2. Likewise, the final step under Petitioner's summary of the claimed inventions both involve outputting a "fused image." Id. Petitioner fails to show why image processing elements alone require almost 14,000 additional words.

The overlap between the two Petitions is also emphasized by the fact that the Petitioner uses the same prior art as its "primary" reference (Parulski) and the secondary prior art references in both Petitions relate to the same subject area.

Moreover, Petitioner previously filed an unsuccessful IPR petition IPR2018-01348, which challenged U.S. Patent No. 9,185,291, the grandparent to the '479 patent. In that petition, Petitioner challenged 10 claims of the '291 patent, again using Parulski as the primary prior art reference. IPR2018-01348, Paper 2 at 8. In IPR2018-01348, Petitioner was able to challenge 10 claims, concerning both image processing and optical design. Petitioner has not shown why it was able to address all of the claims in IPR2018-01348 but

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needs an additional 14,000-word Petition to address the claims in the Petitions at issue here.

Petitioner's unjustified decision to burden the Board and patent owner with 27,619 words of Petitions challenging the '479 patent should not be rewarded, and the Board should exercise its discretion to deny this Petition.

VI. CONCLUSION

For the reasons set forth above, the petition fails to establish a reasonable likelihood of prevailing on any challenged claim. The Petition should also be denied in the Board's discretion as a result of Petitioner's multiple Petitions addressing the '479 patent. Patent Owner respectfully requests that the Board deny institution.

Dated: August 13, 2020

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CERTIFICATE REGARDING WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Patent Owner certifies that there are 2,736 words in the paper excluding the portions exempted under 37 C.F.R. § 42.24(a)(1).

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CERTIFICATE OF SERVICE

I hereby certify that “Patent Owner’s Preliminary Response” (Paper No. 7)

was served on August 13, 2020 by email sent to:

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